In the Claims

1. (currently amended) ~~Block~~ A block copolymer corresponding to the following formula:

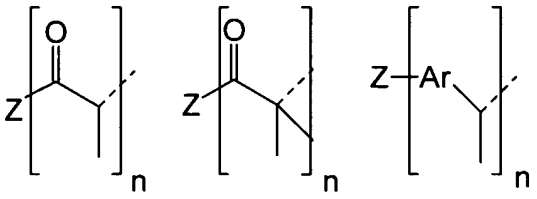
I–$(B)_n$-$(A)_m$, in which n is an integer greater than or equal to 1, m an integer less than or equal to n, B a polymer block directly bonded to the core I via a covalent bond, obtained by the polymerization of a mixture of monomers (B_0) comprising:

- from 90 to 100% by weight of at least one monomer (B_1) chosen from the group consisting of linear or branched C_1-C_{12} alkyl acrylates,
- from 0 to 10% by weight of at least one monomer (B_2) chosen from acids and their derivatives, such as acrylic acid, methacrylic acid and their salts,

A a polymer block directly bonded to the B block via a covalent bond, obtained by the polymerization of a mixture of monomers (A_0) comprising:

- from 95 to 100% by weight of at least one monomer (A_1) chosen from the group consisting of methacrylic monomers, styrene monomers and their derivatives,
- from 0 to 5% by weight of at least one monomer (A_2) chosen from acids and their derivatives, such as acrylic acid, methacrylic acid and their sodium or potassium salts,

the core I being an organic group corresponding to one of the following formulae:



Ia Ib Ic

in which Ar denotes a substituted aromatic group and Z is a polyfunctional organic or inorganic radical with a molar mass of greater than or equal to 14.

2. (currently amended) ~~Copolymer~~ The copolymer according to Claim 1, ~~characterized in that~~ wherein the said polyfunctional organic radical is ~~chosen from the following~~ selected from the group of radicals consisting of: 1,2-ethanedioxy, 1,3-propanedioxy, 1,4-butanedioxy, 1,6-hexanedioxy, 1,3,5-tris(2-ethoxy)cyanuric

acid, polyaminoamines, ~~such as~~ polyethyleneamines, 1,3,5-tris(2-ethylamino)cyanuric acid, polythioxy, phosphonate ~~or~~ and polyphosphonate.

3. (currently amended) ~~Copolymer~~ The copolymer according to Claim 1, ~~characterized in that~~ wherein the said polyfunctional inorganic radical is chosen from the complexes of formula $M^{n+}O^{-}_{n}$, in which M is a magnesium, calcium, aluminium, titanium, zirconium, chromium, molybdenum, tungsten, manganese, iron, cobalt, nickel, palladium, platinum, copper, silver, gold, zinc or tin atom.

4. (currently amended) ~~Copolymer~~ The copolymer according to Claim 1, ~~characterized in that~~ wherein B_0 comprises:

- from 92 to 98% by weight of monomers B_1 and
- from 2 to 8% by weight of monomers B_2.

5. (currently amended) ~~Copolymer~~ The copolymer according to ~~one of the preceding claims~~ Claim 1, ~~characterized in that~~ wherein B_2 is preferably acrylic acid.

6. (currently amended) ~~Copolymer~~ The copolymer according to ~~one of the preceding claims~~ Claim 1, ~~characterized in that~~ wherein A_0 comprises:

- from 95 to 98% by weight of monomers A_1 and
- from 2 to 5% by weight of monomers A_2.

7. (currently amended) ~~Copolymer~~ The copolymer according to ~~one of the preceding claims~~ Claim 1, ~~characterized in that~~ wherein A_2 is preferably methacrylic acid.

8. (currently amended) ~~Copolymer~~ The copolymer according to ~~one of the preceding claims~~ Claim 1, ~~characterized in that~~ wherein the B block represents from 50 to 95% by weight of the total weight of the said copolymer.

9. (currently amended) ~~Copolymer~~ The copolymer according to ~~one of the preceding claims~~ Claim 1, ~~characterized in that~~ wherein the B block has a Tg of less than 0°C and preferably of less than -30°C.

10. (currently amended) ~~Copolymer~~ The copolymer according to ~~one of the preceding claims~~ Claim 1, ~~characterized in that~~ wherein the B block has a weight-average mass of between 2000 and 300 000 g /mol, preferably of between 10 000 and 200 000, and a polydispersity index of between 1 and 3.

11. (currently amended) ~~Copolymer~~ The copolymer according to Claim 1, ~~characterized in that~~ wherein the A block has a Tg of greater than ambient temperature and preferably of greater than 90°C.

12. (currently amended) ~~Process~~ A process for the preparation of the copolymer of ~~any one of the preceding claims~~ Claim 1 by controlled radical polymerization according to the following scheme:

the polymerization at a temperature of between 60 and 150°C of the mixture B_0, in the presence of an alkoxyamine and of an agent for controlling the polymerization, up to a degree of conversion of 90%,

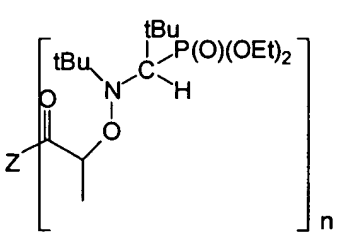
the removal of a portion or of all of the unreacted monomers B_0,

the addition and the polymerization of the mixture A_0,

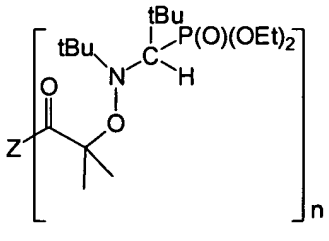
the removal of all of the unreacted monomers and recovery of the copolymer formed,

characterized in that the recovery is carried out via a mixer-dryer at a pressure of less than 60 mbar, at a product temperature of greater than 150°C and at a mixer outlet flow rate ranging from 1 to 15 kg/h.

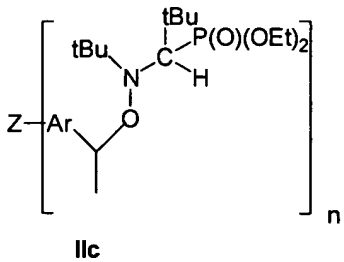
13. (currently amended) ~~Process~~ A process according to Claim 12, ~~characterized in that~~ wherein the alkoxyamine is chosen from the compounds corresponding to one of the following formulae:



IIa



IIb



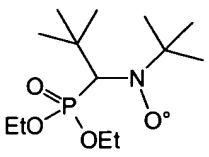
IIc

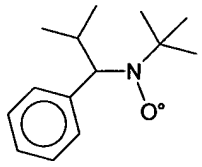
in which Z is a polyfunctional organic or inorganic radical with a molar mass of greater than or equal to 14.

14. (currently amended) ~~Process~~ A process according to Claim 13, ~~characterized in that~~ wherein the said polyfunctional organic radical is chosen from the following radicals: 1,2-ethanedioxy, 1,3-propanedioxy, 1,4-butanedioxy, 1,6-hexanedioxy, 1,3,5-tris(2-ethoxy)cyanuric acid, polyaminoamines, such as polyethyleneamines, 1,3,5-tris(2-ethylamino)cyanuric acid, polythioxy, phosphonate or polyphosphonate.

15. (currently amended) ~~Process~~ A process according to Claim 13, ~~characterized in that~~ wherein the said polyfunctional inorganic radical is chosen from the complexes of formula $M^{n+}O^{-}_{n}$, in which M is a magnesium, calcium, aluminium, titanium, zirconium, chromium, molybdenum, tungsten, manganese, iron, cobalt, nickel, palladium, platinum, copper, silver, gold, zinc or tin atom.

16. (currently amended) ~~Process~~ A process according to ~~one of Claims 12 to 15~~ Claim 12, ~~characterized in that~~ wherein the control agent is chosen from the compounds corresponding to one of the following formulae:





17. (currently amended) Adhesive composition comprising:

- from 15 to 50% by weight of the total weight of the composition of at least one block copolymer according ~~to one of Claims 1 to 11~~ Claim 1,
- from 35 to 50% by weight of the total weight of the composition of at least one tackifying resin,
- from 10 to 30% by weight of the total weight of the composition of at least one plasticizer.

18. (currently amended) Composition according to Claim 17, ~~characterized in that~~ wherein the plasticizer is chosen from oils of trimellitate type, such as trioctyl trimellitate, or predominantly naphthenic oils, such as Catenex N956 from Shell.

19. (currently amended) Composition according to Claim 17, ~~characterized in that~~ wherein the tackifying resin is chosen from the group consisting of resins based on rosins, on rosin ester, on polyterpene, on hydroxylated polyester, on terpene styrene, on pentaerythritol terpene or on terpene phenol (typically).

20. (currently amended) ~~Use of the composition according to one of Claims 17 to 19 in the manufacture of~~ The Adhesive composition of Claim 17 comprising an adhesive ~~tapes or labels~~ tape or label.

21. (cancel)